

Burlington Ditch
Adams County, Brighton Vicinity
Colorado

HAER No. CO-45

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Rocky Mountain Regional Office
Department of the Interior
P. O. Box 25287
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD
BURLINGTON DITCH

Location: The Burlington Ditch system is located in Colorado's South Platte River drainage in Water District No. Two, Division No. One. The headworks, which are utilized jointly by the Burlington Ditch, the O'Brian Canal, and the Denver-Hudson Canal, are located on the South Platte River near the City of Denver. The Burlington Ditch empties into both Barr Lake and the Brighton Lateral in Adams County, Colorado.

Quads: Commerce City, Sable, and Brighton

Date of Construction: 1885-1888 (Expanded 1910-1912)

Present Owners: Jointly owned and operated by the Burlington Ditch, Reservoir and Land Company, Brighton, Colorado; the Farmers Reservoir and Irrigation Company, Brighton, Colorado; and the Henrylyn Irrigation District, Hudson, Colorado.

Present Use: Agricultural irrigation

Significance: The Burlington Ditch is part of one of the largest irrigation systems in northeastern Colorado, and has served as an integral part of the local farm economy.

Historians: James E. Sherow, R. Laurie Simmons, and Christine Whitacre; Front Range Research Associates, Denver, Colorado; November 1988

INTRODUCTION

~~Beginning in the latter part of the nineteenth century, the~~ building of irrigation systems became a major industry in northeastern Colorado. More than any other single factor, it was the availability of water which affected land use and settlement in this area of the state. An elaborate system of canals and reservoirs transformed this semi-arid land into some of the nation's most intensively cultivated farmland. The Burlington Ditch, in joint operations with the O'Brian and Denver-Hudson Canals, is part of one of the largest and most significant of these early water diversion systems.

The history and operations of the Burlington Ditch are intertwined with those of the O'Brian Canal and the Denver-Hudson Canal. These three ditch systems share the same headworks (Township 3 South, Range 68 West, Section 14). All three systems also divert water through the first 5.43 miles of the Burlington Ditch, which is referred to as either the "Main Burlington" or the "Enlarged Burlington." The Enlarged Burlington is jointly owned and operated by the Burlington Ditch, Reservoir and Land Company; the Farmers Reservoir and Irrigation Company (FRICO); and the Henrylyn Irrigation District.

At the end of the Enlarged Burlington (Township 2 South, Range 67 West, Section 29), a bifurcation structure divides the water flow between the "Little Burlington" and the O'Brian Canal. The Little Burlington is owned by the Burlington Company. The O'Brian Canal is managed by Farmers Reservoir and Irrigation Company. The O'Brian Canal, which veers to the east, feeds into the Denver-Hudson Canal, which is owned by the Henrylyn Irrigation District. The Little Burlington, which continues in a northerly direction, feeds into the Brighton Lateral. This lateral gate marks the end of the Little Burlington (Township 1 South, Range 66 West, Section 29).1

Although the ownership and operations of the three ditch companies are closely joined, this report deals primarily with the original Burlington Ditch system. This system encompasses both the Enlarged Burlington and the Little Burlington. For a discussion of the O'Brian Canal, see HAER report No. CO-46.

GEOGRAPHIC SETTING

The Burlington Ditch is located within the Beebe Draw, a topographically low area lying between the South Platte River Valley and the Box Elder Valley. The Beebe Draw is a north-south geological formation paralleling the South Platte River to the east. It is comprised of sandy loams which were once part of the South Platte River alluvium.2

The Burlington Ditch measures approximately twenty miles in length, and is located entirely within Adams County in Water ~~District No. Two, Irrigation Division No. One.~~ The ditch headworks are located near the northeastern corner of the City of Denver. The Enlarged Burlington flows through an urban environment, which includes several oil refinery operations. In contrast, the Little Burlington irrigates farmlands in rural Adams County. Most of the Burlington Ditch system has remained unaltered since its completion in 1888, retaining much of its historical integrity while, at the same time, supplying important water needs for contemporary farming operations.

BURLINGTON DITCH, RESERVOIR AND LAND COMPANY INCORPORATION

The Burlington Ditch, Reservoir and Land Company was incorporated on 12 November 1885 by Arthur E. Meek, John P. Heisler, Alvan Taylor, Joseph M. Brown, and Peter O'Brian.³ Arthur E. Meek, the company's first president, came to Colorado in the 1860s. Meek founded the A. E. Meek Trunk and Bag Company, a regional supplier of leather valises and trunks.⁴

John P. Heisler, the company's first secretary, came to Denver in 1870 as part of the crew that laid the Kansas Pacific Railroad track. After working as a newspaper reporter and editor, Heisler became a lawyer in 1876, specializing in real estate, corporation, and irrigation law. In 1892, he was elected as the Arapahoe County representative to the Colorado General Assembly, and served as Republican Central Committee chairman.⁵

Joseph M. Brown, a board member, came to Colorado in 1859 and homesteaded on the South Platte River near Littleton, Colorado. In 1863, he was elected to the board of county commissioners of Arapahoe County, on which he served for eighteen years.⁶ Alvan Taylor, also a board member, was a Denver businessman who served as secretary of the Union Ice Company.⁷

Board member Peter O'Brian was the Burlington Company's engineer. A native of Canada, O'Brian apprenticed under Robert Hamilton, and was an engineer on the Coorillon canal and dam, a Canadian public works project. In 1879, he came to Colorado to survey mineral claims in Pitkin and Gunnison Counties. In 1880, he was elected county surveyor of Arapahoe County, a position he was re-elected to several times. In 1895, O'Brian was elected city surveyor of Denver.⁸

The Burlington Ditch, Reservoir and Land Company was organized as a mutual stockholding corporation, as were most ditch companies in Colorado during the late 1800s. The companies acted as non-profit enterprises that provided a diversion of river flow, assessed for upkeep, and allowed a vote in policy

formation in proportion to each shareholder's ownership in the company. As soon as the farmers paid for their shareholdings, ~~they cooperatively owned and managed the company.~~

When farmers bought shares in the Burlington Ditch, Reservoir and Land Company, they received a right to a proportion of the company's water rights. Money from the sale of company stock was applied to the construction of the canal and reservoir system. In order to supplement the income from stock sales, which alone could not finance the system's construction, the company also marketed bonds. By 1893, the Burlington company stood on solid financial ground with 3,288.5 of its four thousand shares of stock fully paid, amounting to \$82,137.50. The bonded debt of the company stood at a manageable twenty thousand dollars.⁹

DESIGN AND CONSTRUCTION

Peter O'Brian designed, surveyed, and guided the construction of the Burlington Ditch. His plans called for a ditch that would tap the South Platte River, and Sand, First, Second, and Third Creeks for direct irrigation. The ditch would feed water into two contiguous reservoirs: Barr Lake and Oasis Reservoir.

O'Brian located the Burlington Ditch headworks near Denver's Riverside Cemetery. At the headgate, the ditch measured thirty feet across the bottom, forty-two feet across the top, and was four feet deep. For the first two to three miles of construction, O'Brian directed "difficult and heavy grading along the bluffs of the Platte River between the bottom grounds and the table lands." One particular cut, over a mile in length, measured fifteen feet in depth. The construction crew worked horse-drawn scrappers and the larger wheelers (the most common machines used in canal building at the time), and it was difficult and tiring labor. Completed in November 1888, the ditch measured approximately twenty miles in length from the headworks to the point where it fed water into Barr Lake and Oasis Reservoir, near the present location of the Brighton Lateral.¹⁰

O'Brian encountered many difficulties during the construction of the ditch. Farmers already lived in the area, which meant the pre-existence of a local transportation network. Consequently, the line of the ditch had to be crossed four times by railroad tracks, and approximately fifteen times with wagon roads "besides numerous other private ways and roads." O'Brian also had to give careful consideration to the construction of the headworks. The Platte River carried large volumes of sand and fine silts. In order to prevent the headgate from being choked

with sand, O'Brian constructed two "very substantive and expensive headgates...one to receive water and the other to discharge sand."¹¹ In addition, the cut of the ditch through sand and loams initially meant water leakage through the porous bottom of the canal. In time, however, the river's fine silt sealed the bottom of the ditch. As long as this lining remained undisturbed, the Burlington Ditch carried water without great transit losses.

In addition to the Platte River, the Burlington Ditch also had water rights to Sand, First, Second, and Third Creeks. To tap the creek flows, O'Brian intersected the ditch line with the creeks. O'Brian would leave one wall of the ditch open to the creek, and would strengthen and set the opposite wall to form a dam that directed the creek flow into the ditch without eroding the ditch banks.

WATER RIGHTS

The Burlington company initially secured unreliable water rights for its ditch system. The ditch could carry 350 cubic feet per second (cfs) of water, and the company acquired a court-adjudicated right to appropriate that amount of water. (In 1902, the Burlington company increased the capacity of the main canal to seven hundred cfs.¹²) The appropriation date was 20 November 1885, the time of the initial construction of the ditch. At the same time, the company acquired rights to the flows of Sand, First, Second, and Third Creeks. The creeks, however, had flows that usually occurred only during spring runoffs and after rainstorms.¹³

In times of drought, the Burlington Ditch's weak water rights meant hardship for its irrigators. Under Colorado's prior appropriation system, the enterprises with the earliest-dated decrees received their water before those with later-dated water rights. In Water District No. Two, Division No. One, in which the Burlington system is located, there were fifty-six water rights to the Platte River which predated 20 November 1885. During the severe drought of 1890, the district water commissioner curtailed diversions to any ditches with water rights subsequent to 1865. His actions resulted in a "serious loss of crops," most likely suffered by irrigators using the Burlington Ditch.¹⁴

To supplement their company's weak water rights, the stockholders of the Burlington system had to secure pre-existing water rights with earlier adjudicated dates. Such rights existed in the Duggan Ditch Company, which was incorporated in 1864 and was located approximately three miles downstream from the Burlington headgate. The three-mile ditch had a 27.4

cfs water right dated 1 April 1865. With a priority number of seven, this right provided water on an almost never-failing basis.¹⁵

By 1911, the Burlington company had acquired one-third of the Duggan Ditch company's water rights. The Burlington company wanted to divert this 1865 water right through its own headgate. The stockholders of six local ditch companies, as well as thirty other individuals, protested this change in the Denver District Court, fearing the transfer would adversely affect their diversions. But the court found otherwise and awarded the Burlington company 9.28 cfs of the Duggan company's water rights.¹⁶

In May 1912, Matilda Sanstad, who then owned one-third of the Duggan Ditch, also wanted to join her right with the Burlington Ditch, and to have her lands irrigated by the same system. Again four local ditch companies objected to the change, but the court ignored their pleas and awarded the Burlington company Sanstad's 9.133 cfs water right.¹⁷ In 1923, the Burlington company secured 7.98 cfs of the Duggan company's rights. In 1927, the company acquired the last one cfs Duggan right.¹⁸ The Burlington company's acquisition of this 27.4 cfs of water has provided the mainstay of the company's diversions.

JOINT OPERATIONS WITH OTHER DITCH COMPANIES

In March 1909, the Burlington Company entered into a contract with the Farmers Reservoir and Irrigation Company which greatly expanded the operations of the Burlington Ditch. Under this agreement, the Farmers Reservoir and Irrigation Company diverted water through the headgate and first 5.43 miles of the Burlington Ditch. At that point, the Farmers Company built a bifurcation structure which divided the water flow between the Burlington Ditch and the O'Brian Canal. The Burlington Ditch and O'Brian Canal then flowed alongside each other, both entering Barr Lake.¹⁹

In addition, the Farmers company enlarged Barr Lake and Oasis Reservoir by removing the dam which separated the two reservoirs. The Burlington company retained the right to store water up to the point where the reservoirs were enlarged; and the Farmers company had the right to store water in the remainder of the reservoir. On the north side of Barr Lake, the Farmers company released their reservoir water into the Speer and Neres Canals. The Burlington company released its hold into the West and East Burlington Extension Canals.²⁰

In 1910, the Henrylyn Irrigation District also joined operations with the Burlington and Farmers companies. The

Henrylyn district diverted water through the Burlington headgate, through the first 5.43 miles of the Burlington Ditch, and then ~~through the O'Brian Canal to a bifurcation structure just prior~~ to Barr Lake. At that point, the Henrylyn water was diverted to the Denver-Hudson Canal, which skirted Barr Lake to the east and extended well beyond to irrigate the Henrylyn district's land. The Henrylyn district also agreed to enlarge the Burlington headworks with a concrete diversion dam, headgate, and waste gate. This headworks structure has served all three systems up to the present time.

But the shared water delivery system soon created conflict among the three companies. Henrylyn irrigators suspected that the Burlington and Farmers companies were storing their water in Barr Lake. In the summer of 1920, the situation grew tense when Henrylyn irrigators took matters into their own hands and routed water into the Denver-Hudson Canal. Farmers from the three companies armed and faced each other at Barr Lake, and the Adams County sheriff arrested two farmers of the Henrylyn district.²¹ Cooler heads eventually prevailed, however, and the companies resorted to the traditional tactic of filing several suits in local courts. Eventually, the expense of litigation led to an out-of-court settlement, which took the form of a twenty-three page contract signed in 1921. This arrangement established the responsibilities and rights of each party in the shared system, and has effectively governed the relationships between the three companies up to the present time.²²

CROP PRODUCTION

The Burlington Ditch has served as an integral part of the local farm economy of Adams County. Even though the amount of water that flows through the ditch fluctuates from year to year, the company averages around twenty thousand acre feet of water in ditch diversions per year.²³ This water irrigates an average of 12,700 acres of farmland.

Alfalfa, cereals, and sugar beets made up the largest percentage of crops grown under the system. For nearly fifty years, the Great Western Sugar factory in Brighton purchased sugar beets grown by Burlington irrigators. After 1950, however, sugar beet production declined when the local factories closed.²⁴ Two other food processing plants in Brighton, the Kuner-Empson Company and the Fort Lupton Canning Company, also drew produce from the various truck and market garden crops grown by Burlington irrigators.²⁵

The Burlington Ditch helped bring a rich ethnic diversity to Adams County. At the beginning of the twentieth century, sugar beet production required intensive labor, much more than was

needed in the production of cereals and alfalfa. As a result, the Great Western Sugar factory actively encouraged immigration into the area to bolster the work force needed for sugar beet production. Many German-Russian immigrants did stoop labor in the beet fields. As soon as they could, however, they bought their own farmlands. Several of these families settled under the Burlington system. Japanese also arrived in the area and followed the same pattern of settlement as had the Russian-Germans. New Mexican and Mexican immigrant workers eventually replaced both the Russian-Germans and the Japanese, and many still work raising the market crops grown under the Burlington system.²⁶

DITCH STRUCTURES AND MODIFICATIONS

By 1912, the joint operations of the Burlington Ditch, the O'Brain Canal, and the Denver-Hudson Canal were completed, and the systems were enlarged to their present day proportions. Although some segments of the Burlington ditch have been rechanneled, the original ditch line is basically the same. The original ditch structures also remain largely unaltered.

The Burlington Ditch's concrete diversion dam, headgate, and waste gate were constructed by the Henrylyn Irrigation District in 1911-12. These headworks, which service three ditch systems, replaced the original smaller headgate completed in 1888. The structure has changed little over the years, although the steel radial gates of the headgate were replaced in the fall and winter of 1983-84.²⁷ (See photographs HAER Nos. CO-45-1, CO-45-2, and CO-45-3.) The Burlington/O'Brian and O'Brian/Denver-Hudson bifurcation structures were constructed between 1910 and 1912, at the time the three ditch companies joined operations. Both of these structures are built of concrete and steel and have been left unaltered, although some of the operators may have been replaced. (See photographs of the Burlington/O'Brian bifurcation, HAER Nos. CO-45-6 and CO-45-7.)²⁸

The Burlington Ditch siphon under Sand Creek was constructed in 1900, as part of the original Burlington system. The inverted siphon is composed of three concrete tubes which suck the Burlington Ditch water beneath Sand Creek. The siphon tubes are original, although a new concrete top was added in the fall and winter of 1983-84. (See photograph HAER No. CO-45-4.)²⁹

The Burlington Ditch originally fed directly into the west side of Barr Lake in Township 1 South, Range 66 West, Section. 29. Although the Burlington company's water is still delivered into the reservoir through the O'Brian Canal, the ditch's direct feed into the reservoir has been closed. About one-quarter mile west of the point where it originally fed into Barr Lake, the

Burlington Ditch now feeds directly into the Brighton Lateral.
(See photograph HAER No. CO-45-9).

Over the years the local urban environment has influenced the operations of the Burlington company. The East Denver Sanitary Sewer No. One dumped sewage water into the Platte River at a point above the Burlington headworks. In 1912, Denver and the Burlington company agreed that for an initial five thousand dollars and annual payments thereafter, the Burlington company would receive this sewage water.³⁰ In the 1960s, however, the City of Denver relocated the sewer operations, and constructed a new waste treatment plant below the Burlington headworks. The Burlington irrigators, fearing they would lose the right to divert this valuable water resource, took the City of Denver to court to confirm their right to the waste water. The court ordered the City of Denver to construct a pumping plant to direct the treated sewage water into the Platte River above the Burlington headworks, and required the Burlington company to pay the pumping cost whenever it wanted to divert the waste water. Otherwise, the city could release the sewage downstream from the Burlington headworks. (See photograph HAER No. CO-45-5.)³¹

As Denver and other local municipalities grew, their demands for more water to supply residential and industrial needs increased. By the 1970s, some shareholders in the Burlington company found farming so unprofitable that they began selling their water rights to surrounding cities. As a result, the cities of Thornton, Westminster, South Adams, and Denver are now stockholders in the Burlington Ditch, Reservoir and Land Company. This has yet to cause serious problems for the stockholders who have retained their irrigation operations, but some anticipate such problems.³²

The urban environment near the headworks has caused water pollution problems for the Burlington Ditch. In 1939, the State of Colorado threatened legal action against the City of Denver for dumping polluted water through the East Denver sewer plant into the Burlington system. Thereafter, the released waste water was more carefully monitored.³³ The farmers have also tried to keep a careful watch on the waste dumped into the rivers by petroleum refineries located near the headworks.³⁴

The growing Denver metropolitan area has resulted in increased automobile traffic that has altered the Burlington operations. In the late 1960s, during the construction of Interstate-80S (now called Interstate-76), segments of the Burlington Ditch were relocated and channelized in concrete.³⁵ At other locations where I-76 intersected the ditch line, engineers bridged over the ditch. At first, the Burlington irrigators thought this solution worked well. Over time,

however, it became evident that these bridges interrupted the work of the company's ditch rider, who was responsible for monitoring and regulating the amount of water flowing from the ditch into individual stockholders' laterals. The bridges interrupted the roadways used by the ditch riders, who then had to detour several miles to reach segments of the ditch located on the other side of the bridge, greatly increasing time and expense.³⁶

Overall, the Burlington Ditch, Reservoir and Land Company has worked to maintain the historical quality and quantity of its water rights. In 1988, the Burlington Ditch system remains much the same as it did in 1888. The Burlington stockholders still govern themselves within a mutual stockholding corporation, and the company continues to engage in a mutually beneficial relationship with the Farmers Reservoir and Irrigation Company and the Henrylyn Irrigation District. Local cities own some of the Burlington stock, but the company's irrigators still raise crops that are important to the local farm economy. Although Burlington irrigators now farm with modern techniques and exist in an increasingly urban environment, they continue to depend upon the operations of the ditch in much the same manner as did their predecessors a century ago.

NOTES

1For the location of the irrigation structures mentioned, see: General Map of the Standley Lake Irrigation System, Owned and Operated by the Farmers Reservoir and Irrigation Company, March 1912; and the Commerce City and Brighton U.S.G.S. quadrangle maps.

2For the geological information on Beebe Draw, see: John J. Sampson and Thomas G. Baber, Soil Survey of Adams County, Colorado (Washington, D.C.: Government Printing Office, 1974); and Beebe Draw Diversion and Augmentation Program: Report No. 1, The Water Resources of Beebe Draw (Lakewood, Colorado: Hydro-Triad, Ltd., 1985), pp. II-1-19.

3"The Burlington Ditch, Reservoir and Land Company," Corporation Files, Colorado Secretary of State, Denver, Colorado.

4Denver Times, 14 July 1898, p. 6; and Thomas J. Noel, Denver: Rocky Mountain Gold (Tulsa, Oklahoma: Continental Heritage Press, Inc., 1980), p. 218.

5C. L. Swords and William C. Edwards, Sketches and Portraiture of the State Officers and Members of the Ninth General Assembly of Colorado (Denver: Carson, Hurst and Harper, 1893), p. 82; and Frank Hall, History of the State of Colorado (Chicago: Blakely Print Co., 1889-95), 4:472.

6Denver Rocky Mountain Herald, 2 July 1910.

7Denver City Directory, 1885, (n.p.: Corbett and Ballengers, n.d.).

8O'Brian's name is sometimes given as O'Brien. For biographical information see: Hall, 4:537; and The Colorado Graphic, 3 (22 October 1887): 1.

9"Burlington Company," Corporation Files.

10In the Matter of the Adjudication of the Priority of Water Rights, in District No. 2, on Appropriation of The Burlington Ditch, Reservoir and Land Company (No. 11200), Arapahoe County, Dist. Ct. Colorado.

11Ibid.

12"Burlington Ditch Enlargement," file no. 195 1/2, State Engineer's Office, Denver, Colorado.

13 "In the Matter of the Adjudication of the Priority of Water Rights (No. 11200)."

14 "Water Division No. 1: South Platte Division," Fifth Biennial Report of the State Engineer to the Governor of Colorado for the Years 1889 and 1890, Part 1, (Denver: State Printers, 1891), p. 75.

15 The Burlington Ditch, Reservoir and Land Company v. Charles M Jump, et al. (No. 40,300), City and County of Denver, Dist. Ct. Colorado.

16 In the Matter of the Petition of the Duggan Ditch Company, a Corporation, to Change the Point of Diversion of a Portion of Irrigation Priority No. 7 in Water District No. 2 from the Headgate of the Duggan Ditch to the Headgate of the Burlington Ditch, both Located in Water District No. 2 (No. 52,042), City and County of Denver, Dist. Ct. Colorado.

17 In the Matter of a Certain Petition for the Adjudication of Priority of Rights to the Use of Water in Water District No. 2. On Petition of Matilda Sanstad to Change the Point of Diversion of a Part of Irrigation Priority No. 7 in the Water District No. 2 from the Headgate of the Duggan Ditch to the Headgate of the Burlington Ditch, Both in Said Water District No. 2 (No. 52,668), City and County of Denver, Dist. Ct. Colorado.

18 In the Matter of the Petition of the Burlington Ditch, Reservoir and Land Company, a Corporation, to Change the Point of Diversion of a Portion of Irrigation Priority No. 7 in Water District No. 2 from the Headgate on the West Bank of the South Platte River in Section 19, Township 2 South, Range 67 West, Sixth P.M. Adams County, Colorado, to the Headgate of the Burlington Ditch, Both Located in Water District No. 2 (No. 95386), City and County of Denver, Dist. Ct. Colorado.

19 "Final Copy: Contract with the Burlington Ditch Company for Enlargement of Barr Lake and the Burlington Canal," in the case of The Farmers Reservoir and Irrigation Company, v. The Henrylyn Irrigation District (No. 9766), Colorado Supreme Court, 17 March 1909.

20 "Agreement between the Burlington Ditch, Reservoir and Land Company, the Farmers' Irrigation and Reservoir Company, and the Henrylyn Irrigation District, 1 July 1921," Office Files, Burlington Ditch, Reservoir and Land Company, Brighton, Colorado.

21 Interview with Harlan Wall, President of the Burlington Ditch, Reservoir and Land Company, 8 December 1987; and "Ownership of Water in O'Brian Canal Under Controversy," The

Brighton (Colo.) Blade, 2 July 1920.

22"Agreement, 1 July 1921."

23Water Commissioner's Field Book(s), District 2, State of Colorado, 1920, 1925, 1930, 1935, 1940, 1945, 1950, 1959, and 1965," State Engineer's Office, Denver, Colorado. These years were selected, and the amount of water diverted by the Burlington Ditch in these years as recorded by the commissioner in District No. Two was summed and then averaged.

24"Water Commissioner's Field Book(s), District 2, State of Colorado, 1911, 1915, 1920, 1925, 1930, 1935, 1940, 1945, and 1950," State Engineer's Office, Denver, Colorado.

25W. Carl Dorr, Looking Back: A Historical Account of the Development of Brighton and Surrounding Community, from 1859-1976 (Brighton, Colorado: Brighton Bi-Centennial Committee, 1976), p. 8.

26Charles Engebretson, Brighton Reflections: 1776-1976 (Brighton, Colorado: Brighton Publishing Company, 1976) pp. 24-25; and Dorr, Looking Back, p. 42.

27Interview with Manuel Montoya, Ditch Technician, Farmers Reservoir and Irrigation Company, Brighton, Colorado, 29 September 1988.

28Ibid.

29Ibid.

30"City Starts Suit to Collect Cash from Burlington," Denver (Colorado) Post, 15 November 1913.

31Interview with Harlan Wall, 8 December 1987.

32Ibid.

33"Ditch Filled with Sewage, State Avers," Denver Post, 6 August 1939.

34Interview with Harlan Wall, 8 December 1987.

35Ibid.

36Ibid.

BIBLIOGRAPHY

Public Documents

- Colorado. Colorado Geological Survey. Prairie Peak and Plateau: A Guide to the Geology of Colorado. Prepared by J. Chronic and H. Chronic. Colorado Geological Survey Bulletin 32. Denver: State Printers Office, 1972.
- Colorado. State Engineer's Office. Fifth Biennial Report of the State Engineer to the Governor of Colorado for the Years 1889 and 1890. Denver: State Printers Office, 1891.
- Colorado. Water Conservation Board. A Hundred Years of Irrigation in Colorado: 100 Years of Organized and Continuous Irrigation, 1852-1952. Denver: Water Conservation Board; and Fort Collins: Colorado Agricultural and Mechanical College, 1952.
- Sampson, John H., and Thomas G. Baber. Soil Survey of Adams County, Colorado. Washington, D.C.: Government Printing Office, 1974.

Books

- Brown, F. Lee, and Helen M. Ingram. Water and Poverty in the Southwest. Tucson: University of Arizona Press, 1987.
- Dorr, W. Carl. Looking Back: A Historical Account of the Development of Brighton and Surrounding Community, from 1859-1976. Brighton, Colorado: Brighton Bi-Centennial Committee, 1976.
- Downing, Theodore and McGuire Gibson, eds. Irrigation's Impact on Society. Tucson: University of Arizona Press, 1974.
- Dunbar, Robert G. Forging New Rights in Western Waters. Lincoln: University of Nebraska Press, 1983.
- Engelbert, Ernest A., and Ann Foley Scheuring, eds. Water Scarcity: Impacts on Western Agriculture. Berkeley: University of California Press, 1984.
- Engebretson, Charles. Brighton Reflections: 1776-1976. Brighton, Colorado: Brighton Publishing Company, 1976.
- Hall, Frank. History of the State of Colorado. Chicago: Blakely Print Co., 1889-95.

- Hundley, Norris. Water and the West: The Colorado River Compact and the Politics of Water in the American West. Berkeley: University of California Press, 1966.
- Kelso, Maurice M., E. Martin William, and Lawrence E. Mack. Water Supplies and Economic Growth in an Arid Environment: An Arizona Case Study. Tucson: The University of Arizona Press, 1973.
- Lee, Lawrence B. Reclaiming the American West: An Historiography and Guide. Santa Barbara: ABC-Clio, 1980.
- Maass, Arthur, and Raymond Anderson. ...And the Desert Shall Rejoice. Cambridge: MIT Press, 1978.
- Miles, Don. Salinity in the Arkansas Valley of Colorado. Denver: Environmental Protection Agency, 1977.
- Mutel, Cornelia Fleischer, and John C. Emerick. From Grassland to Glacier: The Natural History of Colorado. Boulder, Colorado: Johnson Books, 1984.
- Noel, Thomas J. Denver: Rocky Mountain Gold. Tulsa, Oklahoma: Continental Heritage Press, Inc., 1980.
- Pisani, Donald J. From Family Farm to Agribusiness: The Irrigation Crusade in California and the West, 1850-1931. Berkeley: University of California Press, 1984.
- Radosevich, G. E., ed. Colorado Water Laws: A Compilation of Statutes, Regulations, Compacts and Selected Cases. Fort Collins: Colorado State University, 1983.
- Radosevich, G. E., K. C. Nobe, D. Allardice, and C. Kirkwood. Evolution and Administration of Colorado Water Law: 1876-1976. Littleton, Colorado: Water Resources Publications, 1976, 1985.
- Smythe, William Ellsworth. The Conquest of Arid America. New and Revised Edition. New York: The MacMillan Company, 1907.
- Stone, Wilbur E., ed. History of Colorado. 4 vols. Chicago: S. J. Clarke Publishing Co., 1918.
- Steinel, Alvin. History of Agriculture in Colorado. Fort Collins: The State Agricultural College, 1926.
- Swords, C. L., and William C. Edwards. Sketches and Portraiture of the State Officers and Members of the Ninth

General Assembly of Colorado. Denver: Carson, Hurst and Harper, 1893.

White, Richard. Land Use, Environment, and Social Change: The Shaping of Island County, Washington. Seattle: University of Washington Press, 1980.

Worster, Donald. Rivers of Empire: Water, Aridity and the Growth of the American West. New York: Pantheon Books, 1985.

Periodicals

Carpenter, Delph E. "Brief on Law of Interstate Compacts." Report of the State Irrigation Commissioner to the Kansas State Board of Agriculture for the Biennium July 1 1924, to June 30, 1926. Topeka, Kansas: State Printer, 1926.

Clark, Ira G. "The Elegant Butte Controversy: A Chapter in the Emergence of Federal Water Law." Journal of American History 61 (March 1975): 1006-1033.

Dunbar, Robert G. "The Origins of the Colorado System of Water-Right Control." Colorado Magazine 27 (October 1950): 241-262.

Fireman, Milton, and H. E. Haywood. "Irrigation Water and Saline and Alkali." Water: The Yearbook of Agriculture. Washington, D. C.: Government Printing Office, 1955.

Howe, Charles W. "The Effects of Water Resources Development on Economic Growth: The Conditions for Success." Natural Resources Journal 16 (October 1976): 939-955.

Lindauer, Ivo E., "A Comparison of the Plant Communities of the South Platte and Arkansas River Drainages in Eastern Colorado." The Southwestern Naturalist 28 (August 1983): 249-258.

MacKendrick, Donald. "Before the Newlands Act: State Sponsored Reclamation Projects in Colorado, 1888-1903." Colorado Magazine 52 (Winter 1975): 1-21.

McHendrie, A. W. "The Hatcher Ditch (1846-1928): The Oldest Colorado Irrigation Ditch Now in Use." Colorado Magazine 5 (June 1928): 81-95.

Mead, Elwood. "An Unsolved Western Problem: The Division of the Waters of the Inter-State Streams." The Irrigation Age 7 (July 1894): 12-15.

Pisani, Donald J. "State vs. Nation: Federal Reclamation and Water Rights in the Progressive Era." Pacific Historical Review 51 (August 1982): 276-282.

_____. "Enterprise and Equity: A Critique of Western Water Law in the Nineteenth Century." Western Historical Quarterly 18 (January 1987): 15-37.

White, Richard. "Historiographical Essay, American Environmental History: The Development of a New Historical Field." Pacific Historical Review 54 (August 1985): 297-335.

Worster, Donald. "History as Natural History: An Essay on Theory and Method." Pacific Historical Review (February 1984): 1-19.

_____. "New West, True West: Interpreting the Region's History." Western Historical Quarterly 18 (April 1987): 141-156.

Published Reports

Beebe Draw Diversion and Augmentation-Program: Report No. 1, The Water Resources of Beebe Draw. Lakewood, Colorado: Hydro-Triad, Ltd., 1985.

First - Thirty-Second Report of the State Engineer, Colorado, 1891-1944. Denver: State Printers Office, 1893-1945.

Unpublished Reports

Miles, Don. "Recharge: Its Role in Total Water Management, Arkansas Valley of Colorado." Paper Presented to the Great Plains Council Groundwater Management Seminar, Denver, Colorado, April 1974.

Unpublished Theses and Dissertations

Hendrickson, Gordon Olaf. "Water Rights on the North Platte River: A Case Study of the Resolution of an Interstate Water Conflict." Ph.D. Dissertation, University of Wyoming, 1975.